

What is claimed is:

1 1. A storage device comprising:
2 a probe having a tip, the tip being electrically conductive; and
3 a storage medium, the storage medium being electrically conductive and
4 electrically contacted to the tip, wherein the tip is adapted to form a dent in the storage
5 medium,
6 wherein the tip is adapted to cooperate with the storage medium to provide a
7 variable resistance based on whether the tip is engaged in the dent.

1 2. The storage device of claim 1, wherein the variable resistance has a first
2 resistance value in response to the tip being engaged in the dent, and wherein the variable
3 resistance has a second resistance value in response to the tip being engaged on a surface of
4 the storage medium but not in the dent, the first resistance value being less than the second
5 resistance value.

1 3. The storage device of claim 2, further comprising a sensing device to detect
2 current flow through the variable resistance between the probe and the storage medium.

1 4. The storage device of claim 3, further comprising circuitry to indicate a first
2 data state in response to detecting a first detected current corresponding to the first resistance
3 value, and to indicate a second data state in response to detecting a second current value
4 corresponding to the second resistance value.

1 5. The storage device of claim 1, wherein a first surface area of the tip is
2 electrically contacted to the storage medium in response to the tip not being engaged in a
3 dent, and
4 wherein a second, larger surface area of the tip is electrically contacted to the
5 storage medium in response to the tip being engaged in a dent.

1 6. The storage device of claim 1, further comprising circuitry to apply a voltage
2 to the probe, wherein the variable resistance is between the probe and the storage medium.

1 7. The storage device of claim 6, further comprising an electrical conductor, the
2 storage medium being between the electrical conductor and the probe.

1 8. The storage device of claim 7, wherein the electrical conductor is electrically
2 connected to a ground potential, the storage device further comprising a sensing circuit to
3 detect a current flow through the probe, variable resistance, storage medium, and electrical
4 conductor that is dependent upon the variable resistance.

1 9. The storage device of claim 1, further comprising additional probes each
2 having an electrically conductive tip electrically contacted to the storage medium,
3 wherein the storage medium has plural storage cells, the tips of at least some
4 of the probes to form dents in respective storage cells,
5 wherein each tip cooperates with the storage medium to provide a variable
6 resistance based on whether the tip is engaged in a dent.

1 10. The storage device of claim 1, wherein the tip is heatable to form the dent.

1 11. A system comprising:
2 a processor; and
3 a storage device coupled to the processor, the storage device comprising:
4 a probe having an electrically conductive tip;
5 a storage substrate having an electrically conductive layer electrically
6 contacted to the tip,
7 the tip adapted to form dents in the electrically conductive layer,
8 the tip to interact with the electrically conductive layer to provide a
9 signal path having a variable resistance based on whether the tip is engaged in a dent.

1 12. The system of claim 11, wherein the variable resistance has a first resistance
2 value in response to the tip being engaged on the surface of the electrically conductive layer
3 but not engaged in a dent, and wherein the variable resistance has a second, smaller resistance
4 value in response to the tip being engaged in a dent.

1 13. The system of claim 12, wherein a first surface area of the tip is electrically
2 contacted to the storage medium in response to the tip being engaged on a surface of the
3 electrically conductive layer but not being engaged in a dent, and
4 wherein a second surface area of the tip is electrically contacted to the storage
5 medium in response to the tip being engaged in a dent,
6 the second surface area being larger than the first surface area.

1 14. The system of claim 11, wherein the probe comprises a nanotechnology probe.

1 15. The system of claim 11, further comprising at least a second probe having an
2 electrically conductive tip, the tip of the second probe adapted to form dents in the
3 electrically conductive layer,
4 wherein the tip of the second probe is adapted to interact with the electrically
5 conductive layer to provide a second signal path having a variable resistance based on
6 whether the tip of the second probe is engaged in a dent.

1 16. The system of claim 15, wherein the storage device further comprises sensors
2 to detect current flows through the signal paths.

1 17. The system of claim 16, wherein each sensor is adapted to detect a first current
2 in response to a corresponding signal path having a first resistance, and to detect a second
3 current in response to a corresponding signal path having a second resistance.

1 18. A method of storing data in a storage device, comprising:
2 writing to storage cells of a storage medium by forming dents in selected ones
3 of the storage cells with a probe, wherein the storage medium is formed at least in part by an
4 electrically conductive material;
5 electrically contacting an electrically conductive tip of the probe to the storage
6 medium; and
7 during a read, detecting a resistance value of a signal path having variable
8 resistance based on whether the electrically conductive tip of the probe is engaged in a dent in
9 the storage medium.

1 19. The method of claim 18, wherein detecting the resistance value of the signal
2 path comprises:
3 detecting a first resistance value in response to the electrically conductive tip
4 of the probe being engaged in a dent; and
5 detecting a second, larger resistance value in response to the electrically
6 conductive tip of the probe being engaged on a surface of the storage medium but not in a
7 dent.

1 20. The method of claim 19, further comprising moving the storage medium with
2 respect to the probe during each of the write and read operations.

1 21. The method of claim 19, further comprising: —
2 indicating a first storage state in response to detecting the first resistance
3 value; and
4 indicating a second storage state in response to detecting the second resistance
5 value.